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THE UNIVERSITY OF SOUTH ALABAMA
COLLEGE OF NURSING
EMERGENCY CONTRACEPTION: KNOWLEDGE AND PRACTICES OF
MILITARY HEALTH CARE PROVIDERS

BY

Beth M. Baykan

A Thesis

Submitted to the Graduate Faculty of the
University of South Alabama
in partial fulfillment of the
requirements for the degree of

Master of Science

in

The Department of Nursing

May 2003

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ABSTRACT

Baykan, Beth M., M.S.N., University of South Alabama, May 2003. Emergency Contraception: Knowledge and Practices of Military Health Care Providers. Chair of Committee: Dr. Mary Candice Ross.

The purpose of this descriptive study was to examine the knowledge and practices of military health care providers regarding the use of emergency contraception. A cross-sectional convenience sample was used to survey 435 military health care providers at 2 military hospitals. Two research questions guided the study: (1) What are the knowledge and practices of military health care providers regarding emergency contraception?, (2) Is there a relationship between knowledge and practices of military health care providers regarding emergency contraception? A 24-item researcher-developed survey was used for data collection. The variables measured were knowledge and practice. The diffusion of innovations theory served as the theoretical model. Physicians, resident physicians, nurse practitioners, and physician assistants ($N = 104$) completed the survey. All participants reported having heard of emergency contraception. A moderate relationship was noted between knowledge and practices ($r = .57, p < .01$). Participants had more knowledge about emergency contraception than practices. This study suggests the need for an educational program to improve knowledge and practices and the need for further research with a military population.

CHAPTER I

INTRODUCTION

Contraceptives in the form of pills, injections, patches, condoms, diaphragms, and cervical caps are routinely discussed between health care providers and patients. Rarely is there discussion about what a patient should do when there is contraceptive failure such as a missed pill, a condom break, or slippage of a diaphragm, or cervical cap. Emergency contraception, a back-up method of contraception, that was first described in the 1970's should be discussed regularly with patients as an option to prevent pregnancy for instances when a contraceptive method fails or unintended sexual contact occurs.

Patients depend on health care providers to provide up to date information on health care issues. Yet, less than 10% of physicians discuss emergency contraception with their patients (Delbanco, Mauldon, & Smith, 1997). Data associated with military health care providers and their emergency contraceptive prescriptive and counseling practices is extremely limited.

Problem

This study focused on the relationship between knowledge of emergency contraception and practices of emergency contraception among military health care providers using Rogers' diffusion of innovations theory as a theoretical framework.

Research Purpose

The purpose of this study was to describe knowledge and practices of military health care providers regarding the use of emergency contraception in military medical treatment facilities. The findings represent the groundwork for future research on the subject of emergency contraception in the military health care system.

Research Questions

The research questions for this study were:

1. What are the knowledge and practices of military health care providers regarding emergency contraception?
2. Is there a relationship between knowledge and practices of military health care providers regarding emergency contraception?

CHAPTER II

REVIEW OF LITERATURE

Unintended Pregnancy

There is a high incidence of unwanted or unintended pregnancy due to a lack of a birth control method, contraceptive failure, or sexual assault. The Centers for Disease Control and Prevention (CDC) estimate that 49% of the approximately 5.4 million pregnancies that occur each year in the United States are unintended (CDC, 1997). Forty-seven percent of these unintended pregnancies occurred while the woman was “using a method of birth control” with pregnancy resulting from contraceptive failure or improper use of the contraceptive method (Delbanco et al., 1997). A recent study published in 2002 revealed that 54% of 10,683 women seeking pregnancy termination were using a method of birth control in the month they became pregnant (Jones, Darroch, & Henshaw, 2002).

Worldwide, 50 million pregnancies end in abortion each year (Glasier, 1997). Approximately 14,000 of these abortions were due to a pregnancy following rape or incest (Torres & Forrest, 1988).

Henshaw (1998) estimated that by age 45-- 43% of women-- would have had an abortion. With emergency contraception approximately 600,000 to 1.7 million unintended pregnancies could be prevented each year (Trussell, Stewart, Guest, & Hatcher, 1992). A study by the Alan Guttmacher Institute (AGI) provided data supporting

an estimate that 51,000 abortions were prevented with the use of emergency contraceptives in the year 2000 (Jones et al., 2002).

With an unintended pregnancy rate of nearly 45% among military women, there is little doubt that military women can also benefit from emergency contraception (Evans & Rosen, 1996). Emergency contraception could reduce the number of abortions had by military women; although the exact number of abortions obtained by military women and military health care beneficiaries was unknown at the time of this study.

Since federal law prohibits the use of Department of Defense funds or medical facilities for elective abortions, military women who are sexually assaulted or raped could benefit from timely administration of emergency contraception and possibly avert unwanted pregnancies or abortions (Air Force Instruction 44-102, Department of the Air Force, 1998).

Emergency Contraception

Emergency contraception, the morning-after pill, or the Yuzpe method are synonyms used to describe a back-up birth control method used post-coitally following contraceptive failure or unprotected intercourse. The method, first described in Canada in 1977 by Yuzpe and Lancee, involves taking two oral contraceptive pills within 72 hours of unprotected intercourse followed by another dose 12 hours later (Yuzpe & Lancee, 1977).

Emergency contraceptive pills contain a combination of 100- μ g of ethinyl estradiol and 0.5 mg of levonorgestrel or 0.75 mg of levonorgestrel only. The effectiveness of these methods in preventing pregnancy ranges from 75% to 89%, respectively (Task

Force on Postovulatory Methods of Fertility Regulation, 1998; Trussell & Raymond, 1999).

Twenty years after the discovery of emergency contraception the Food and Drug Administration (FDA) approved oral contraceptives for use as emergency contraception in the United States. Emergency contraception is currently available by prescription in the United States under the commercial names PREVEN and Plan B (manufactured by Gynetics, Inc., Somerville, NJ and Women's Capital Corporation, respectively). PREVEN is a combined estrogen and progestin pill while Plan B contains progestin only.

The term "emergency contraception" can also be used to describe insertion of an intrauterine device (IUD) within five days after unprotected intercourse (Glasier, 1997). This method is costly, not readily available in the military environment, and will not be addressed in this study.

Mechanism of Action

Many studies have been conducted to determine the mechanism of action of emergency contraception (Glasier, 1997; Ling, Robichaud, Zayid, Wrixon, & MacLeod, 1979; Ling, Wrixon, Acorn, Wilson, & Collins, 1983; Swahn, Westlund, Johannisson, & Bygdeman, 1996; Trussell & Raymond, 1999). Some studies have shown that emergency contraception inhibits or delays ovulation (Ling et al., 1979; Swahn et al., 1996). Another study concluded that emergency contraception could not be as effective if it worked only by preventing or delaying ovulation (Trussell & Raymond, 1999). Other possible mechanisms of action include interference with the functioning of the corpus luteum; thickening of the cervical mucus that results in trapping of sperm; changes in tubal

transport of sperm, egg, or embryo; and prevention of fertilization (Glasier, 1997; Ling et al., 1983). What is certain is that emergency contraception is not an abortifacient and does not interfere with an existing pregnancy (Creinin, 1997; Glasier, 1997; Henry J. Kaiser Family Foundation, 1997).

Teratogenic Effects

There have been no studies examining the long-term effects of taking emergency contraceptive pills when a pregnancy has occurred. However, reported cases of women who unintentionally continued taking their regular birth control pills during the first weeks of pregnancy have demonstrated no teratogenic effects evident at birth (Henry J. Kaiser Family Foundation, 1997).

Current Use

Only 1% of women of reproductive age reported having ever used emergency contraceptive pills. Another 5% of women say they learned of emergency contraceptive pills from a health care provider and 55% of women reported not knowing emergency contraception is available in the United States (Henry J. Kaiser Family Foundation, 1997; Langer, et al., 1999).

Military Studies

Literature from 1966 to 2002 was searched using the National Library of Medicine's "Pubmed" database to compare these findings with studies involving a military

population and emergency contraception. One research article using a military population was identified.

Van Royen, Calvin, and Lightner (2000), used a self-report questionnaire to survey a convenience sample of 302 non-medical United States Air Force military personnel regarding knowledge and attitudes of emergency contraception. Van Royen et al. (2000) reported that 65% of respondents had heard of emergency contraception but only 15% of respondents knew the correct time for taking the pills. The study detected a lack of knowledge about basic reproductive physiology and emergency contraception among the military population sampled (Van Royen et al., 2000). The authors concluded that knowledge deficits should be addressed to provide an option for supporting military women in remaining deployable (Van Royen et al., 2000). This study was limited with regard to sample homogeneity and generalizability to the Air Force population.

Military Women

Unintended pregnancy hinders the readiness of military women. Davis (1999) defined readiness as, "the ability of soldiers to leave their current situations with very short notice for unknown locations, for indefinite periods of time, to perform a multitude of soldiering tasks in often extremely austere and remote environments" (p. 9). Readiness necessitates not only that female soldiers not be pregnant at the time of deployment but also that they remain so throughout the deployment period (Davis, 1999). Emergency contraception provides a tool, which facilitates women toward this goal.

Women comprise 14.9% of the total active duty military force and 22.3% of the reserve forces (Women's Research and Education Institute [WREI], 2002). Over 90% of

military women are of reproductive age (WREI, 2002). Operation Desert Shield/Storm saw more than 41,000 women deployed in combat (Davis, 1999).

Markenson, Raez, and Colavita (1992) performed a retrospective three-month review of inpatient and outpatient records from the Eighth Evacuation Hospital in Saudi Arabia during Operation Desert Shield/Storm. They cited pregnancy as the major cause of medical evacuation ($n = 28$) (Markenson et al., 1992). All pregnancies were diagnosed within one month of arrival to Saudi Arabia. It was unclear whether pregnancies occurred prior to or during deployment and hence unknown if emergency contraception could have decreased the pregnancy rate. Birth control pills were cited as the most frequently prescribed gynecologic medication ($n = 128$) (Markenson et al., 1992). There was no data available to determine whether female soldiers used the birth control pills for routine contraceptive practices or for use as an emergency contraceptive.

In a similar study of women deployed during Desert Storm, Hines (1992) reported a total of 24 pregnancies among 1,056 female personnel. An estimated 6 pregnancies occurred prior to deployment. Lyon (1996) in her review of literature available from Desert Shield/Desert Storm states that the "greatest loss in terms of productivity and cost to manage was pregnancy" (p. 174). The potential reduction in unintended pregnancies among military women equipped with emergency contraception should not be overlooked.

Beneficiaries of Military Health Care

Military health care consumers also include retired and dependant family members such as children and spouses. There are many women of reproductive age in this subset. If one thinks of reproductive age beginning at an average age of 12 years and continuing

until a mean age of 51, the potential benefit of emergency contraception for consumers of military healthcare is immense (Stenchever, Droegemueller, Herbst & Mishell, 2001). Military women and recipients of military health care could benefit from emergency contraception as a way to “back-up” their usual method of birth control or in instances when a sexual encounter was not anticipated.

Knowledge and Practices of Health Care Providers

In a study of civilian healthcare providers, only 7% of physicians reported that they had discussed emergency contraception with their patients during routine counseling. The same study revealed that 83% of women at risk for unplanned pregnancy stated that they rely on health professionals for information about birth control (Delbanco et al., 1997). Only 5% of women who report having heard of emergency contraceptive pills learned about them from health care providers (Henry J. Kaiser Family Foundation, 1997).

The Henry J. Kaiser Family Foundation (KFF) conducted a follow-up study in 2000 that reported 7% of obstetrical gynecologists and 8% of family practice physicians say they always discuss emergency contraception as part of routine counseling. The same survey noted that most physicians who prescribed emergency contraception did so only a handful of times (KFF, 2000). A survey of physician’s knowledge regarding emergency contraception found just 77% of physicians reported being “very familiar” with emergency contraception (KFF, 1997).

Langer et al. (1999) surveyed 40 providers in Mexico. Their study revealed that although two-thirds of providers reported that they had heard of emergency contraception, they were no more likely to know that it is postcoital contraception than the providers who

reported that they had not heard of it. This study illustrates how being familiar with the term emergency contraception (awareness-knowledge) and knowing its use (how-to-knowledge) are two separate phenomena.

Low prescription rates have been associated with a lack of provider knowledge regarding pill availability, timing of administration and efficacy (Sills, Chamberlain, & Teach, 2000). In a survey of pediatricians by Golden et al. (2001) pediatric providers cite lack of training in emergency contraception use as a barrier to prescribing. Results from a survey of providers in Nairobi, Kenya revealed that 35% of public providers and 80% of private sector providers had heard of emergency contraception, which correlated with reported rates of prescribing, 4% and 46% respectively (Muia et al., 1999).

These studies support the notion of a link between knowledge and practices. However, the percentage of providers who say they have heard of emergency contraception and who are prescribing emergency contraception is not equal. This suggests that providers' self report of knowing may be over inflated while their report of practices may be more precise.

Beckman, Harvey, Sherman, and Petitti (2001) demonstrated that knowledge, through an educational training program, could change provider practices significantly. The study, which surveyed 102 health care providers, revealed a significant improvement in knowledge from baseline (before education) and one year after educational training ($t [91] = 7.06, p < .001$) (Beckman et al., 2001). Providers were more knowledgeable after training about timing, mode of action, and efficacy of emergency contraceptive pills. Prescriptive practices increased from 30% to 49%. The authors concluded that providers

who participate in educational programs show changes in perceptions, knowledge, and behavior (Beckman et al., 2001).

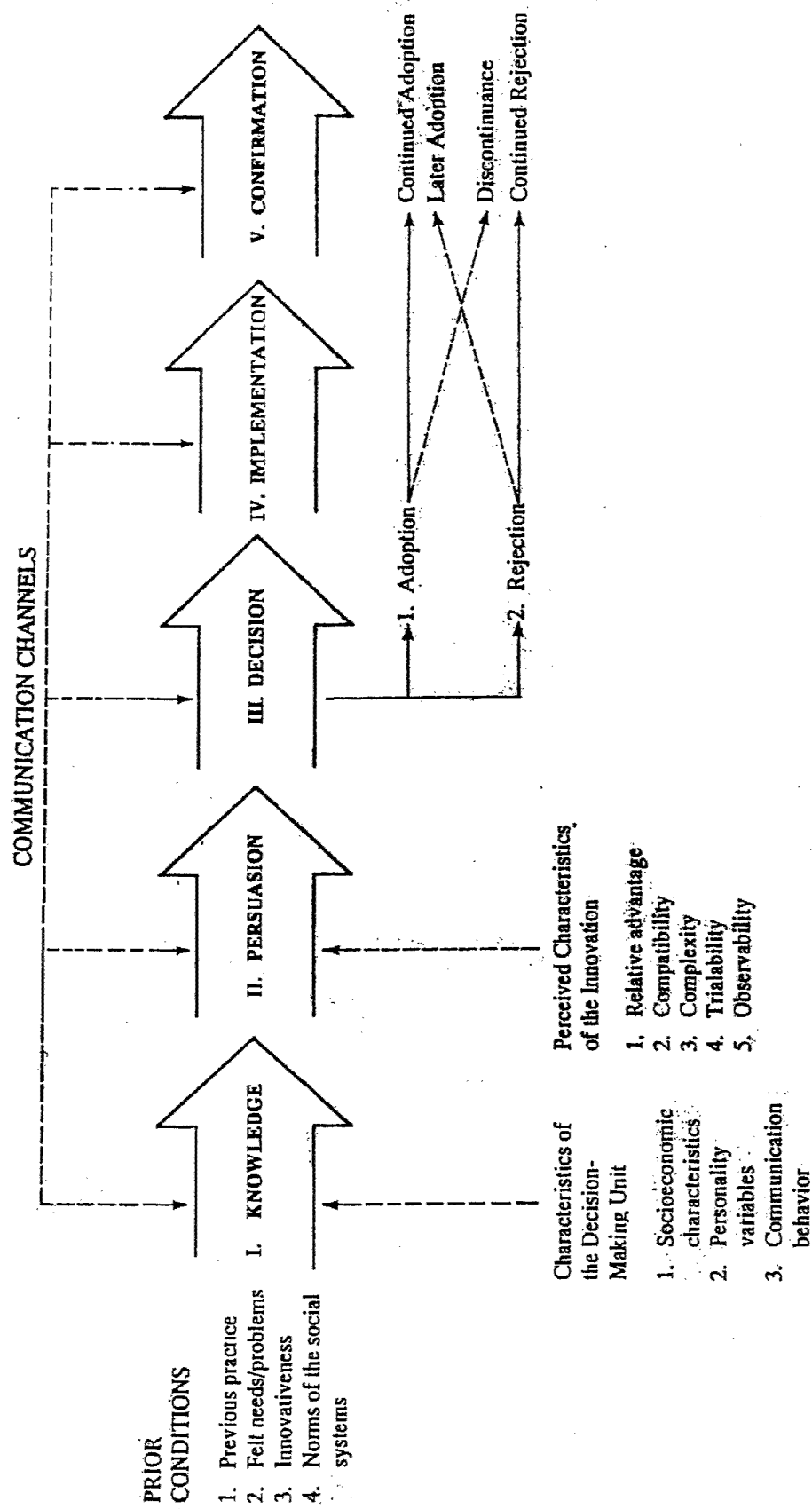
Summary of Literature

The review of research literature related to unintended pregnancies among military women established that the use of emergency contraception in a military population might be beneficial. Just one study of emergency contraception in a military setting was found in the literature. That study examined the knowledge of potential consumers regarding emergency contraception (Van Royen et al., 2000). While a relationship between provider knowledge and emergency contraceptive practice has been found in civilian settings in this and other countries, there were no studies published that examined the knowledge and practices of military health care providers regarding emergency contraception. This study addressed this gap in the literature.

Theoretical Framework

The diffusion of innovations theory by Rogers (1995) served as the theoretical framework for this study. The diffusion of innovations theory is a descriptive, social theory that is concerned with the manner in which a new technological idea or a new use of an old idea migrates from creation to use (Rogers, 1995). The theory has been used in research from technological innovations, such as the computer and fax machine, to medical, nursing research and developing prevention programs. Diffusion of innovations theory has been used in the public health arena to explain or study peoples' adoption of

family planning techniques such as Norplant and the IUD (Rogers, 1995). Figure 1 illustrates the diffusion of innovations theory.



Source: Diffusion of Innovations, 4th Edition by Everett M. Rogers (p. 163). Copyright ©1995 by Everett M. Rogers. Copyright © 1962, 1971, 1983 by The Free Press. Reprinted with permission of The Free Press, a Division of Simon & Schuster, Inc.

Figure 1. A Model of the Stages in the Innovation-Decision Process.

Main Elements in Diffusion of Innovations

“Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system” (Rogers, 1995, p.10). There are four main elements in diffusion of innovations: (1) the innovation, (2) communication channels, (3) time, and the (4) social system. Each of these elements was described in terms of the purposes of this study.

The Innovation

First, Rogers (1995) defines an innovation as “an idea, practice, or object that is perceived as new to an individual or other unit of adoption” (p. 11). In this study, the innovation was emergency contraception. Although emergency contraception was first described in the 1970’s it was considered to be a new innovation since it is not used or known about by health care providers and consumers. Literature supports the low adoption of emergency contraception among health care providers. Only 7% of physicians reported that they discuss emergency contraception with their patients during routine counseling and only 5% of women who have heard of emergency contraceptive pills learned about them from health care providers (Delbanco et al., 1997; Henry J. Kaiser Family Foundation, 1997). Only 1% of women of reproductive age has ever used emergency contraceptive pills, which indicates that many women do not know about emergency contraception (Henry J. Kaiser Family Foundation, 1997). “If the idea seems new to the individual, it is an innovation” (Rogers, 1995, p. 11).

Communication Channels

Communication channels are the ways in which messages are transmitted from one individual to another (Rogers, 1995). The two types of communication channels described by Rogers (1995) were mass media in the form of newspaper, television and radio or interpersonal/face-to-face.

In this study, communication channels among research subjects were investigated. Subjects were asked how they first heard of emergency contraception. Responses to the question were a choice of mass media sources such as a journal article, television/radio, or a research report. Other responses involved interpersonal channels where a face-to-face exchange between two or more individuals could occur such as initial medical training, student clinical, internship/residency, a presentation at a professional meeting, or a colleague or friend.

The type of communication channel was important to assess. It provided the source of initial knowledge for emergency contraception and was used to determine if the type of communication channel influenced the health care providers decision to adopt emergency contraception in their practices. The diffusion of innovations theory states that individuals who receive information about an innovation through interpersonal networks are more likely to adopt the innovation (Rogers, 1995). This study attempted to discover the relationship between source of initial knowledge of the innovation emergency contraception and the health care providers adoption of the innovation as evidenced by their practices.

Time

The time component involved in diffusion research involves three dimensions: (1) the innovative-decision process starts when the individual first learns of the innovation and decides to use or reject the innovation, (2) how early or late the person was in adopting the innovation, and (3) the innovation's rate of adoption within a system (Rogers, 1995). Participants were not asked to recall when they first heard of emergency contraception. Time was not evaluated in this study. While this would have been an interesting variable to assess, this element was not needed to answer the research questions for this study.

Social System

The social system surrounding the innovation, emergency contraception, was addressed. A social system is defined as "a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal" (Rogers, 1995, p. 23). The social system for this study included the military community of health care providers at Keesler and Lackland Air Force Base. Diffusion is said to occur within a social system. This study attempted to determine if members working in the same practice care area (e.g. family medicine clinic) shared common knowledge and practices regarding emergency contraception (Rogers, 1995). The social system within provider type (e.g. physician, nurse practitioner) was insufficient in number and distribution to determine if certain provider types had more or less knowledge and practices than other provider types with regard to emergency contraception.

Diffusion is described as a special type of communication with new ideas, a form of social exchange in a system that results in altering structure and function (Rogers, 1995).

“The innovation-decision process is an information-processing activity in which an individual obtains information in order to decrease uncertainty about the innovation” (Rogers, 1995, p. 20).

Stages in the Innovation-Decision Process

There are five stages in the innovative-decision process through which an individual passes: (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation (see Appendix A). The stages of persuasion and decision were not directly assessed in this study. It was assumed that military health care providers completed these stages if implementation of emergency contraception had occurred as evidenced by the providers' practices. The confirmation stage, when an individual seeks to reinforce the decision to either adopt or reject an innovation, was not addressed due to the time limitations of this study. This study concentrated solely on the knowledge and implementation stages.

Knowledge Stage

In this study, the knowledge stage of the diffusion of innovations theory coincided with the research variable knowledge. The knowledge stage begins when an individual is first exposed to an innovation and gains information about its use. Rogers (1995) defined three types of knowledge, awareness-knowledge, how-to-knowledge, and principles knowledge.

Awareness-knowledge

Awareness-knowledge provides the individual with information that the innovation exists. This type of knowledge was identified in this study with the question, "Have you ever heard of emergency contraception?"

How-to-knowledge

The next type of knowledge, how-to-knowledge which is concerned with information on how to use the innovation effectively, was addressed in this study with specific questions regarding: (a) the timeframe for administering emergency contraception; (b) side effects of emergency contraception; (c) efficacy; (d) contraindications; and (e) risk of congenital malformations with the use of emergency contraception.

Principles-knowledge

The last type of knowledge, principles-knowledge, consists of the underlying principles with how the innovation works. Principles knowledge was not directly assessed since the underlying principles with how the innovation emergency contraception works is not truly known. However, health care providers were asked the method of action by which emergency contraception works. A correct response to this inquiry indicated how-to-knowledge not principles-knowledge. Health care providers were not asked direct questions concerning their understanding of anatomy, physiology, or the reproductive cycle. This information was assumed given their advanced education.

Implementation

In this study, the implementation stage of the diffusion of innovations theory was correlated with the variable practice. The implementation stage in the innovative-decision process occurs when the individual starts using the innovation (Rogers, 1995).

Implementation of emergency contraception in provider practice was determined with the use of five survey questions asking health care providers: (a) the number of times they had prescribed emergency contraception in the last 12 months, and (b) during their entire military career, (c) the number of times they had counseled patients about emergency contraception, (d) the number of times they had prescribed emergency contraception preventatively, and (e) if they believed emergency contraception should be prescribed to a woman every time she requested it if she had no other medical problems.

Summary

Select elements of the diffusion of innovations theory were used to coincide with research variables and specific survey questions. First, communication channels in the form of mass media and interpersonal communication were queried. The type of communication channel was correlated with provider practices since the theory states that individuals who learn of an innovation through interpersonal channels are more likely to adopt the innovation.

Second, the social system was addressed. The provider practice area was examined and correlated with provider knowledge and practices. The purpose of this was to determine if a provider's social atmosphere had an influence on their knowledge and practices since diffusion is said to occur in social systems.

The knowledge stage of the theory was broken down into two types of knowledge, awareness-knowledge and how-to-knowledge. Both types of knowledge were addressed with survey questions. Rogers' (1995) third type of knowledge, principles-knowledge was not assessed.

The implementation stage of the theory was correlated with the variable practice. Health care provider responses to survey questions regarding practice indicated whether they had implemented emergency contraception in their practice.

CHAPTER III

METHODOLOGY

This section focused on describing and explaining the research methodology undertaken to obtain data on the knowledge and practices of military healthcare providers regarding emergency contraception. Methodology for this study included the research design, description of the population and sample, sample selection, setting, data collection instrument, ethical considerations, and data analysis.

Research Design

This study used a descriptive cross-sectional research design to collect baseline data on the variables knowledge and practice in relation to emergency contraception. A descriptive design was used to describe knowledge and practices, which were correlated with the stages of innovation (knowledge and implementation) as described by the diffusion of innovations theory (Rogers, 1995). Variables of interest included knowledge, practice, and select elements of the diffusion of innovations theory.

Definition of Terms

The terms used in the study were defined as follows:

1. Military Health Care Provider: A physician, resident physician, nurse practitioner, or physician assistant who has been active duty military for at least one year and provides care to reproductive age women eligible to receive care in a military treatment facility. Participants had prescriptive privileges for oral contraceptives, at Keesler Air Force Base, Mississippi or Lackland Air Force Base, Texas, the military facilities that participated in this study.

2. Emergency Contraception: A high dose of oral contraceptives taken within 72 hours after unprotected intercourse followed by another dose 12 hours after the first dose to prevent pregnancy; using either combined levonorgestrel (0.5 mg) and ethinyl estradiol (100- μ g) or levonorgestrel (0.75 mg) only. Other methods of emergency contraception such as the intrauterine device were not included in this study.

3. Knowledge: Knowledge was defined by Rogers' (1995) diffusion of innovations theory. Three types of knowledge were defined: (a) awareness-knowledge, (b) how-to-knowledge, and (c) principles-knowledge.

- a. Awareness-knowledge: knowing that something exists (e.g. having "heard" of emergency contraception). Awareness-knowledge was assessed with two survey questions. An affirmative response to either or both question number 1 and 2 indicated that the health care provider had awareness-knowledge. A negative response to question 1 and 2 indicated that the respondent did not have awareness-knowledge or how-to-knowledge. If a respondent lacked both types of knowledge, the logical assumption was that practices in the form of counseling and prescribing were not occurring which resulted in conclusion of the knowledge

and practice section of the survey for that participant. Awareness-knowledge was evaluated in terms of “yes it is present” or “no it is not present”.

- b. How-to-knowledge: indicated that the provider was knowledgeable about how to use emergency contraception. Survey questions 3-8 (Appendix B) elicited how-to-knowledge. For each question, correct responses were given a numerical value of 1. Incorrect responses were tallied as a zero. The number of correct responses yielded a maximum score of 6 points for how-to-knowledge. A score of less than 3 was interpreted to indicate low how-to knowledge. A score of 3-4 was interpreted moderate how-to-knowledge. A score of 5-6 was interpreted as high how-to-knowledge.

- c. Principles-knowledge was not assessed in this study.

4. Practices: Practices were defined as the actions taken by participants that indicated the innovation, emergency contraception, had been implemented. Five items on the survey (items 9-13) addressed: (a) the number of times verbal counseling had taken place, (b) the number of times emergency contraception was prescribed in the previous 12 months, (c) the number of times emergency contraception was prescribed during the participants' entire military career, (d) if emergency contraception was ever prescribed preventatively, and (e) if participants felt a patient should be prescribed emergency contraception every time she requested it if she had no other medical problems. Responses were scored using 1 point for a positive response and a 0 for a negative response; a total score of 5 was possible. A score in the upper one-third (4 or 5) indicated “high” practices.

Population and Sample

The target population for the study was military health care providers. Participation was limited to military health care providers on active duty status, who were in the military for at least one year, who had prescriptive privileges for oral contraceptives, and who had the potential to care for patients who may require emergency contraception.

The study population consisted of military health care providers at the two largest medical centers in the Air Force; Keesler Medical Center at Keesler Air Force Base in Biloxi, Mississippi and Wilford Hall Medical Center at Lackland Air Force Base in San Antonio, Texas. The access to large numbers of health care providers facilitated prompt collection of data and ensured an adequate number of surveys would be returned.

The sample consisted of all available military health care providers who met the study criteria and volunteered to complete the survey. Since the study took place at just two Air Force health care settings, using a cluster sample of convenience, the generalizability of findings to the larger population of military health care providers must be considered with caution in light of advice given by Polit & Hungler (1999), "Adequate consideration must be given to the criteria used to identify a population for a research project due to the effect it has on the interpretation of the results and the generalizability of the findings" (p. 100).

It seemed logical that practices of military health care providers and their civilian equivalents might differ. For this reason, knowledge and practices while serving as a military health care provider in a military setting rather than practices in a non-military setting were needed for the study. Inclusion criteria for the study consisted of the following:

1. Participants completed at least one year of active duty military service as a military health care provider.
2. Participants were on active duty status at the time of data collection.
3. Participants were physicians, resident physicians, nurse practitioners, or physician assistants.
4. Participants had the potential to provide care for patients with a need for emergency contraception (women of reproductive potential).
5. Participants had prescriptive authority for oral contraceptives.

Exclusion criteria included the characteristics not desirable in the population of interest and if met rendered a participant ineligible for the study. Exclusion criteria were:

1. Civilians working as health care providers.
2. Medical students, nurse practitioner students, or physician assistant students in training at a military health care setting.

Sample Selection

A cluster sample was used. In an effort to increase sample size and maximize survey completion rate, all military health care providers working in an outpatient/clinic setting were contacted with the survey and a cover letter that explained the purpose of the study, contact numbers for more information, and a consent statement that established that study participation was voluntary (see Appendix C).

Setting

Two Air Force medical treatment facilities in the southern region of the United States were selected as the site for data collection. The total number of providers eligible to participate in the study was approximately 250 military health care providers, -- approximately 125 providers at each site. The majority of military health care providers were physicians or resident physicians. Other military health care providers included family and women's health nurse practitioners and physician assistants.

Sample Size Determination

To calculate the desired sample size for this descriptive study, the proportions were estimated for knowledge and practice scores. The worst-case scenario was that the proportion was 0.5 (Simon, 2002). A power analysis was used to provide a target number of cases for relationship between knowledge and practice within plus or minus 10%, with an estimated proportion of 0.5, and 95% confidence interval was:

$$n = 1.96^2 \times 0.5 \times (1 - 0.5) / .10^2 = 96.$$

A sample size of 96 provides a power of .80.

The accessible population of military health care providers at the two study sites was estimated at 250. Therefore, a return rate of 38.4% was needed to obtain a sample of 96. Historically, Zabokrtsky (2001) reported a 50% return rate using a single mailed questionnaire with some reminders (timing allotment for data collection was not uniform at study sites) in a military nurse population.

This researcher used mailed questionnaires and e-mail reminders to facilitate survey completion at both sites. A research liaison was utilized at the Lackland site. The research

liaison distributed and collected surveys and served as a point of contact for potential research participants and the researcher. A secondary plan was developed in which a second set of questionnaires and reminder e-mails would be sent in case the survey return was less than 96. The secondary plan was not required because an adequate number of surveys were returned.

Procedure for Data Collection

In accordance with Air Force Instruction (AFI) 36-2601 approval for the survey was obtained from Headquarters, Air Force Personnel Center (AFPC), Randolph Air Force Base, Texas to survey Air Force personnel (Department of the Air Force, 1996). A written request for approval was submitted 30 days prior to surveying. An approval letter and survey control number were obtained before data collection was initiated (copies are provided in Appendix D). A human subjects research proposal was also approved by the Institutional Review Board (IRB) at the University of South Alabama and at each survey site.

The flight commanders at each facility were contacted either by telephone, e-mail or in person to insure their approval of the proposed study and its benefits to the Air Force. Potential participants were notified about the study by e-mail from the researcher.

The research liaison, the obstetrics/gynecology flight commander at Lackland Air Force Base, TX, was recruited to assist in the research process. The research liaison provided a current list of health care providers and e-mailed or faxed the list to the researcher.

The researcher delivered survey packets to internal mail distribution at Keesler. A predetermined number of survey packets were mailed to the research liaison at Lackland who distributed them to potential participants via internal mail distribution. Each survey packet was addressed with mail labels with potential subject's name and duty location. Survey packets contained the cover letter, data collection instrument, and a pre-addressed return envelope to the research liaison (see Appendixes B and C). This method of survey distribution was used for thesis work with a military sample achieving response rates averaging 50% by Zabokrtsky (2001).

The survey was expected to take about 10 minutes for each participant to complete. Participants placed the completed survey in the provided pre-addressed envelope, which was returned through internal hospital distribution to the research liaison.

This method ensured anonymity and encouraged health care providers to complete the survey at their duty location. At the end of one month the survey process was discontinued and data analysis commenced. The actual power of the study was determined during data analysis.

Data Collection Instrument

Data collection was accomplished using an investigator-developed self-report 24-item questionnaire with nine questions adapted, with permission, from two prior studies on emergency contraception (Sills et al., 2000; Van Royen et al., 2000). The questionnaire items assessed knowledge, practices, and demographic data of subjects. Participants completed the survey anonymously. Awareness-knowledge and how-to-knowledge were assessed with eight items to ascertain if the provider had "heard of" emergency

contraception, how they first heard of emergency contraception, method of action, timing of emergency contraceptive dose, efficacy and safety of emergency contraception, side effects of emergency contraceptive pills, and contraindications to prescribing or using emergency contraception.

Practices were explored using five items that addressed routine counseling practices and number of times emergency contraception was prescribed in the previous 12 months and during the health care provider's entire military career. The knowledge and practice items were correlated to the stages of innovation (knowledge and implementation) as described by the diffusion of innovations theory (Rogers, 1995).

The demographic questions were located at the end of the survey. Mateo and Kirchhoff (1999) state that demographic questions are the least interesting to the respondent and should always be located at the end of a survey. There were 10 demographic items assessing type of provider, specialty area, practice care area, age group of patients care was provided for, average number of female patients of reproductive potential cared for weekly, participant's age, branch and number of years of military service, and frequency of religious service attendance.

The military rank and gender of the individual was left out intentionally to ensure anonymity of senior ranking and junior ranking providers. A comment section afforded participants the opportunity to express their opinion about the survey, the subject emergency contraception or any comment they wanted the researcher to have. Each survey item was evaluated for content (see Appendix E for content validity). Face validity, content validity, and internal consistency reliability were addressed.

Face Validity

Face validity was assessed using two individuals to evaluate the survey tool for content, language, and readability, and to make a judgment about whether the survey measured what they understood the concepts to be (Ferris & Norton, 1992, as cited in Norwood, 2000). Two thesis committee members reviewed the survey. Both concurred that instructions were easy to understand and each item was clearly stated.

Content Validity

Content validity was quantified with the help of an expert panel using the method reported by Lynn (1986). The method involved a rigorous five-step process broken down into two stages, the development stage and the judgment-quantification stage, to determine the content validity of the instrument. During the development stage, three steps were undertaken: (a) the variables of the study were examined to identify the full scope of content; (b) the sampling items were generated; and (c) assimilated into useable form. Each item, its source and fit with the diffusion of innovations theory was deliberated (see Appendix E).

The second stage, the judgment and quantification stage involved two steps: (a) assessing individual items for content validity followed by (b) content validity of the entire instrument. Lynn (1986) suggested a minimum of three experts to evaluate a survey tool. This study used three experts. Since there were fewer than five experts, all had to agree the content was valid for a rating to be considered a reasonable representation (Lynn, 1986). Each survey item was evaluated using a 4-point ordinal rating scale (1= not relevant; 2= unable to assess relevance without item revision or item

is in need of revision that would render it irrelevant; 3= relevant but needs minor alteration; 4= relevant and succinct) (Lynn, 1986). The experts rated survey items 3 or 4.

Content validity for the entire instrument was judged on the proportion of items deemed content valid. Three experts were asked for suggestions to improve items or if any omissions were identified. Lynn (1986) states that further clarification may be necessary if items were omitted however, suggestions for improvement may be requested from experts without interfering with the content validity judgment. Recommendations of experts were incorporated into the instrument. The content validity tool used by the experts is available in Appendix F.

Internal Consistency Reliability

Internal consistency reliability for the instrument was examined post-hoc using a Cronbach's alpha. "An instrument may be said to be internally consistent or homogeneous to the extent that all of its subparts are measuring the same characteristic" (Polit & Hungler, 1999, p. 414). Usual values for Cronbach's alpha range from .00 to 1.00, higher values reflect a greater degree of internal consistency (Polit & Hungler, 1999).

Ethical Considerations

The research proposal was submitted to the IRB at the University of South Alabama and approved as "exempt" prior to study initiation. A site-specific IRB application was submitted to the IRBs at Keesler Air Force Base and Lackland Air Force Base. Expedited review was requested and study approval was granted from both sites. IRB approval letters are available in Appendix G.

Consent

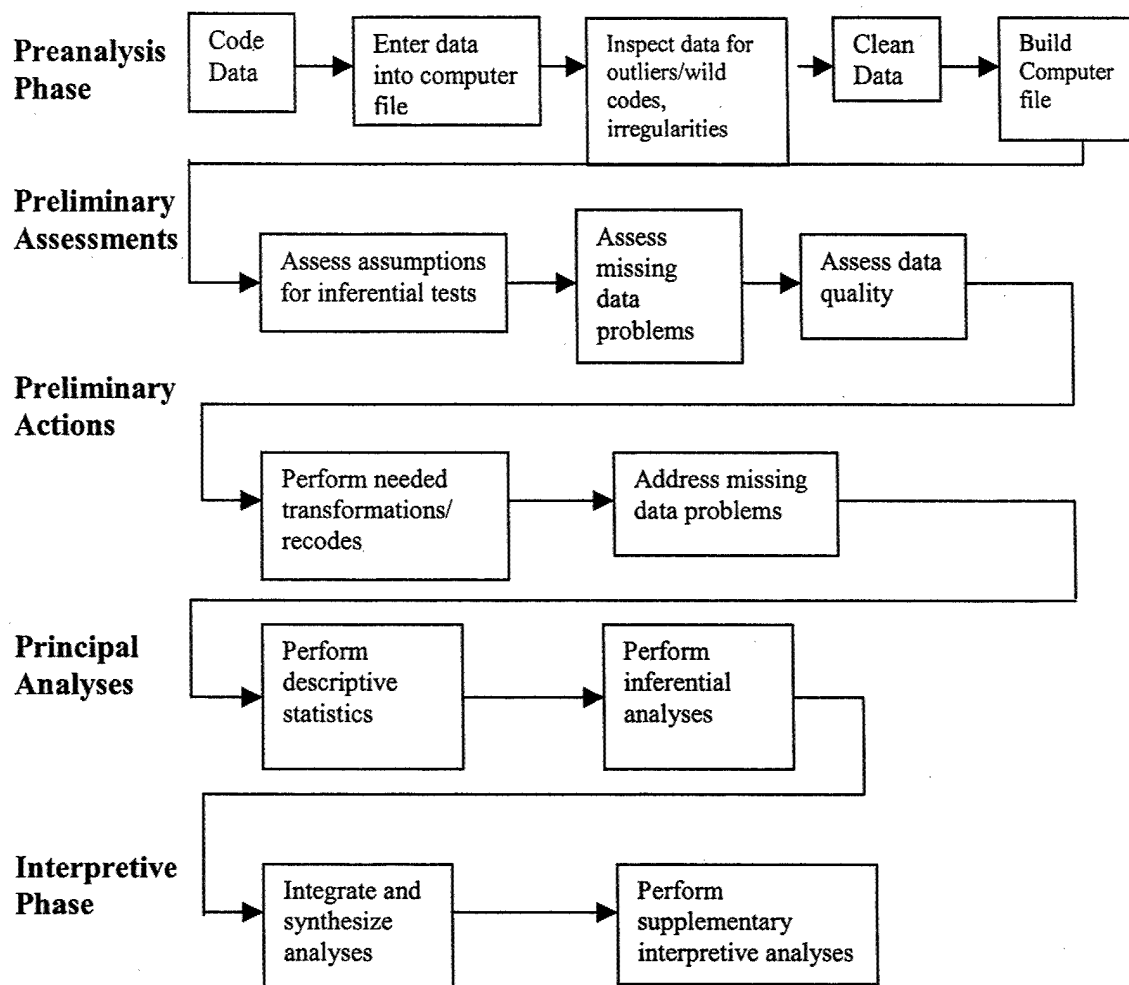
A cover letter (see Appendix C) explained the purpose of the study, eligibility for participation, and clearly stated that participation was voluntary. Consent was assumed based on voluntary return of survey. Anonymity was maintained; no personal identifiers were used on reports or analysis. The sample size was large enough that the identity of participants could not be determined based on demographic characteristics. Survey documents were entered as group data. Surveys were not coded to reveal the site of origination; this provided additional anonymity. Anonymous survey documents were maintained in a locked cabinet in the investigators home.

Data Analysis

Univariate and bivariate descriptive statistics were used for the descriptive analysis of data. Inferential statistics were used to answer specific research questions. The statistical analysis of knowledge and practice scores provided a base to draw inferences about the likelihood of relationships in a larger military population.

For the purposes of this study, the alpha level was set at .05. An alpha at a .05 level of significance is the most widely accepted standard for routine survey research and is appropriate to this kind of topic (Polit, 1996). The Statistical Package for the Social Sciences (SPSS) 11.0 statistical software was used to perform the data analysis.

Data analysis was divided into five phases: (a) preanalysis (b) preliminary assessments, (c) preliminary actions, (d) principal analyses, and (e) the interpretive phase as described by Polit (1996, p.14). Figure 2 illustrates the data analysis procedure.



Polit, D. F., DATA ANALYSIS & STATISTICS FOR NURSING RESEARCH, © 1996, p. 14. Reprinted by permission of Pearson Education, Inc., Upper Saddle River, New Jersey.

Figure 2. Procedures for Data Analysis.

Preanalysis Phase

Initial data entry was accomplished using SPSS 11.0. A record number was assigned and handwritten on the top right hand corner of each completed survey. This number was not an identifier and was only used to match the electronic record with the paper copy of the survey. Each survey was entered into SPSS 11.0 and then rechecked by visually

inspecting the completed survey data listing against the original survey. One hundred percent (100%) of surveys were reviewed for accurate data entry.

Frequencies distributions were run on data to look for outliers and irregularities possibly indicating errors in data entry. When irregularities were encountered, the researcher matched the data with the original survey, verified the data, and made corrections as needed. This process served to “clean” the data and ensured data entered into the computer was accurate.

Preliminary Assessments

During the preliminary assessment phase, assumptions for using specific inferential statistical tests were evaluated. Missing data problems were examined. Mean substitution was used only to replace missing data related to the variable age. Otherwise, the missing data was managed by listwise deletion, as required, in univariate and bivariate analyses.

Frequencies distributions were computed and reported as a number and percent. If a value was missing, the valid percent (percent calculated on actual number of cases excluding the missing value) was reported. Histograms for continuous variables were used to assess normality. Survey item responses were inspected to determine if each item had adequate variability for the anticipated analyses.

Preliminary Actions

In the preliminary actions phase allowed the researcher transformed and recoded the data as needed. Scale scores were calculated for knowledge and practices of emergency

contraception. The total score for awareness-knowledge consisted qualitatively as “yes it was present” or “no, it was not present”.

Knowledge and practice scales were created by adding 1 point for each response identified as correct (based on current research literature). The total score for how-to-knowledge (a maximum of 6 points) indicated the user’s level of knowledge about how to use emergency contraception. Cronbach’s alpha was used to assess internal consistency of this scale. The level of how-to knowledge ranged from 0 to 6 with a score of 0-2 considered low, 3-4 considered moderate, and 5-6 considered high.

The five survey items related to the providers practice regarding emergency contraception were tallied to yield a total practice score. A Cronbach's alpha was calculated on practice items to assess internal consistency. A maximum practice score of 5 could be obtained. The possible range of practice scores was from 0-5. A score of 0-2 was considered low and 3-5 was considered high. A high score indicated that the provider was more apt to use emergency contraception in practice.

Principal Analyses

Descriptive statistical techniques were used to describe demographic characteristics and to develop a profile of the sample. The number and percent of responses were reported for data pertaining to type of health care provider credentialing, medical specialty, practice area, age group of patients cared for, marital status, branch of military, and frequency of religious service attendance.

The continuous demographic variables: age, number of years of military service and number of females of reproductive potential seen weekly, were reported using the mean

and standard deviation. The descriptive statistics were calculated for the knowledge score, practice score, and demographic interval/ratio data. The normality of the distribution for each variable was examined to determine which statistical tests were appropriate.

Study Question 1

Study Question 1. What are the knowledge and practices of military health care providers regarding emergency contraception?

Descriptive statistics were used to describe the knowledge scores, practice scores, and total score (the sum of the knowledge and practice score). The number and percentage of health care providers scoring low, moderate, and high was reported for how-to-knowledge. In addition, individual how-to knowledge survey items were examined to identify content areas where low how-to knowledge was present.

The ranges of scores, means and standard deviations were reported for knowledge and practice scores independently and as a combined total score. The number of health care providers who indicated awareness-knowledge was reported as a percentage.

Study Question 2

Study Question 2. Is there a relationship between knowledge and practice of military health care providers regarding emergency contraception?

Descriptive statistics were used to describe the relationship between awareness-knowledge and how-to knowledge. Knowledge items were examined to determine if

awareness-knowledge was unique from how-to-knowledge. The relationship between how-to-knowledge and practice was described using descriptive statistics.

A chi-square test of independence was performed between knowledge scores and practice scores. The chi-square was used to determine if there was a relationship between knowledge and practices or if the variables were independent of one another. Two separate chi-squares were performed. First, the knowledge and practice scores were cross-tabulated individually. Then, the knowledge and practice scores were cross-tabulated by group, with knowledge divided into low, moderate, and high; and practices divided into low and high groups. This method provided a more abstract view of the data.

The Pearson's product-moment correlation coefficient r was calculated to describe the relationship between participant knowledge and practices. Pearson's r is a robust parametric statistical test and can withstand violations of its assumptions (Polit, 1996). In this study, the assumption of random sample selection was not met, since a cluster sample of military providers was used. Caution should be exercised when drawing conclusions with these findings.

A Spearman rho, the nonparametric analog of the Pearson's r , was calculated and compared to the Pearson's r . Since there was no difference in the results, the parametric test, Pearson's r was reported since parametric tests are generally preferred over nonparametric tests (Polit & Hungler, 1999).

The coefficient of determination R^2 was calculated from the Pearson's r . The R^2 represented the proportion of variability in practice that could be explained by knowledge.

Theoretical Framework

The participants' self-report of how they first learned of emergency contraception was correlated with the element communication channel as described by the diffusion of innovations theory (Rogers, 1995). Participant practice area was examined in relation to the element social system. The variables knowledge and practice were correlated with the stages in the innovation-decision process, knowledge and implementation, respectively. Knowledge was examined in relation to awareness-knowledge and how-to-knowledge as defined by the diffusion of innovations theory. The implementation stage, when a provider starts using an innovation (emergency contraception), was examined in relation to provider practices; high practice indicated implementation.

Communication Channel

The diffusion of innovations theory states that individuals who learn of an innovation through interpersonal communications are more likely to adopt an innovation (Rogers, 1995). The following method was undertaken to explore this element in the diffusion of innovations theory.

Participants were asked how they first learned of emergency contraception. Responses were divided into two categories, mass communication or interpersonal communication. Mass communication responses consisted of journal article, television/radio, research report, or presentation. Interpersonal responses were initial medical training, student clinical, internship/residency, and colleague/friend. The researcher categorized responses into either mass media or interpersonal communication categories for instances where the health care provider responded "other".

The type of communication channel was cross-tabulated with the variable practices to determine if providers who had heard of emergency contraception through interpersonal networks were more likely to have adopted the innovation (emergency contraception). Results were reported and analyzed with a Pearson chi-square.

Social System

Diffusion is said to occur within a social system (Rogers, 1995). A social system is defined as a set of interrelated units that engage in problem solving to accomplish a common goal (Rogers, 1995). A social system can be individuals, groups, or organizations. In this study, the social system inspected was the participants' practice area. The social system was examined in relation to the variables knowledge and practice. A contingency table was used to cross-tabulate the variables to determine if there was a relationship between provider practice area and knowledge and practices. Results were analyzed using a chi-square.

Awareness-knowledge

The variable knowledge was subdivided into awareness-knowledge and how-to-knowledge as defined by the diffusion of innovations theory (Rogers, 1995). Awareness-knowledge was reported in terms of its presence or absence.

How-to-knowledge

How-to-knowledge was quantified with a point system based on correct responses to specific survey questions. How-to-knowledge was divided (based on score) into low,

moderate, and high. Descriptive statistics were used to report the number and percentage of participants in each category. The mean and standard deviation were also reported for this variable.

Practices

Practices were correlated with the stage of implementation of the diffusion of innovations theory (Rogers, 1995). According to the diffusion of innovations theory, the implementation stage “occurs when an individual puts an innovation to use” (Rogers, 1995, p.172). Evidence that the participant was in the implementation stage was obtained with the practice score; a high score on practice items indicated implementation.

Summary

This study used a descriptive cross-sectional research design. The population included military health care providers at Keesler Air Force Base and Lackland Air Force Base. Military health care providers were physicians, resident physicians, nurse practitioners, or physician assistants.

Emergency contraception was defined as a high dose of oral contraceptives taken within 72 hours after unprotected intercourse followed by another dose 12 hours after the first dose to prevent pregnancy; using either combined levonorgestrel (0.5 mg) and ethinyl estradiol (100-µg) or levonorgestrel (0.75 mg) only.

The variables knowledge and practice were defined and correlated with the stages of the diffusion of innovations theory, knowledge and implementation.

A convenience sample of military health care providers was surveyed. Inclusion and exclusion criteria refined participant eligibility. Data collection included the use of survey, e-mail, and the assistance of a research liaison. Face validity, content validity, and internal consistency procedures assessed the validity and reliability of the data collection instrument.

CHAPTER IV

ANALYSIS OF DATA

This chapter focuses on the findings from the data analysis. The purpose of this study was to examine the knowledge and practices of military health care providers regarding emergency contraception. Demographic variables, a description of the sample, and findings relevant to the proposed research questions are explored in this section.

A total of 435 surveys were sent to military health care providers at Keesler Air Force Base and Lackland Air Force Base. A total of 120 surveys were returned, a response rate of 27%. Three surveys were not useable because they were blank and 13 surveys were rejected because participants were not caring for patients of reproductive potential. A total of 104 surveys were included in the data analysis.

Description of the Sample

The majority of participants were age 39 and younger (83%), married (79%), and were in the Air Force (94%). More than half (60%) of respondents were physician health care providers. Most respondents specialized and practiced in pediatrics, obstetrics/gynecology, or internal medicine. The average length of military service was 9 years ($M = 9.07$, $SD = 6.50$). Demographic characteristics of participants are summarized in Table 1.

Table 1

Demographic Characteristics of Participants (N = 104)

Characteristic	<i>n</i>	%
Age		
26-29	33	32
30-39	53	51
40-49	14	13
50-59	3	3
60-65	1	1
Branch of Service		
Air Force	98	94
Army	6	6
Marital Status		
Married	82	79
Single	15	14
Living as a couple	3	3
Divorced	2	2
Separated	1	1
Frequency of religious services		
Weekly	43	42
Monthly	19	18
Yearly	24	23
Never	17	17

(Table 1 continues)

(Table 1 continued)

Characteristic	<i>n</i>	%
Type of credentialing		
Physician	62	60
Resident physician	28	27
Nurse practitioner	8	8
Physician assistant	6	6
Practice Area		
Pediatrics	31	30
Obstetrics/gynecology	27	26
Internal medicine	19	18
Family medicine	12	12
Other	12	11
Emergency services	3	3
Age of Patients		
Under 17	30	29
17-29	16	15
30-49	5	5
50 and over	20	19
Multiple age groups	33	32

Results

A 24-item researcher-developed survey was used to obtain data on the variables knowledge and practice (see copy of instrument in Appendix B). Two types of knowledge were conceptualized based on the diffusion of innovations theory, awareness-knowledge and how-to-knowledge. Awareness-knowledge was assessed by asking providers if they had heard of emergency contraception. How-to-knowledge was assessed with the following content items with regard to emergency contraception: (a) knowledge of the appropriate time frame for administering emergency contraception, (b) knowledge of the method of action, (c) knowledge of the side effects, (d) knowledge of the efficacy; (e) knowledge of a contraindication to emergency contraception, and (f) knowledge of the risk of congenital malformation with the use of emergency contraception (see survey items 3-8 Appendix B). The knowledge score was computed by totaling the points for each correct response (1 point was awarded for each correct response). A total of 6 points was possible for the cumulative knowledge score.

Survey items 9-13 were used to assess the following content items with regard to participant practice and emergency contraception: (a) frequency of patient counseling in the previous 12 months, (b) frequency of prescribing in the previous 12 months, (c) frequency of prescribing during entire military career, (d) preventative prescribing practices regarding emergency contraception, and (e) whether they thought a woman should be prescribed emergency contraception every time she requests it if she has no other medical problems. Correct responses to practice items were awarded 1 point, a maximum of 5 points was possible. A cumulative practice score was used to indicate

whether participants had progressed to the implementation stage of the diffusion of innovations theory.

The internal consistency of knowledge and practice items was assessed with a Cronbach's Alpha. Cronbach's Alpha can range from 0 to 1 with higher values indicating greater internal consistency reliability in the instrument and generally, reliability coefficients should be at least .70 to be considered satisfactory (Polit, 1996). The Cronbach's Alpha calculated for knowledge items was .41 and practice was .81. However, in order to maintain coherence of scales, the knowledge score was retained for analysis. Appropriate caution should be exercised with regard to drawing conclusions in reference to knowledge items.

Two research questions guided the data analysis. Each item will be discussed separately.

Study Question 1

Study Question 1. What are the knowledge and practices of military health care providers regarding emergency contraception?

All health care providers reported having heard of emergency contraception (awareness-knowledge). The majority (67%) correctly identified the appropriate time frame for administering emergency contraception --within 72 hours of unprotected intercourse (Task Force on Postovulatory Methods of Fertility Regulation, 1998; Trussell & Raymond, 1999).

Most participants indicated knowing a method of action of emergency contraception but nearly 8% indicated incorrectly that emergency contraception induced abortion.

Abortion is not the correct method of action (Task Force on Postovulatory Methods of Fertility Regulation, 1998; Trussell & Raymond, 1999). Three of the providers ($n = 3$) who responded "prevents implantation" stated that even though emergency contraception prevents implantation they believed it was "still an abortion".

A majority (76%) of the participants correctly identified the most common side effect of emergency contraception as "nausea" (Task Force on Postovulatory Methods of Fertility Regulation, 1998; Trussell & Raymond, 1999).

A majority of providers (73%) responded correctly that there was no known risk of congenital malformation from giving emergency contraception to a pregnant woman but 5% thought there was a risk, and 22% did not know.

Table 2

Response to the Survey Question "What Is the Efficacy of Emergency Contraceptive Pills in Preventing Pregnancy Among Women Who Have Had Unprotected Intercourse?" (N = 99)

Percent Efficacy	<i>n</i>	%
20-74	11	11
75-89	38	38
90-99	50	50

Note . 5 participants did not answer. Data was grouped after collection.

Table 2 summarizes the responses received to the item concerning efficacy where only 38% of the participants responded correctly indicating that the efficacy of emergency contraception falls between 75-89% (Task Force on Postovulatory Methods of Fertility

Regulation, 1998; Trussell & Raymond, 1999). The mean response was 83.70 ($SD = 13.64$).

As Table 3 indicates, less than one quarter (22%) of the participants supplied a correct response of "pregnancy" as the only contraindication to giving emergency contraception (Trussell et al., 1992). Provider responses were counted as incorrect if they chose pregnancy (alone a correct response) and an additional response (incorrect). Nearly half of providers mistakenly believed that a history of a blood clotting disorder was a contraindication to providing emergency contraception.

Table 3

Response to Survey Question "What Are the Contraindication(s) to Giving Emergency Contraception?" (N = 104)

Response	<i>n</i>	%
Pregnancy	50	48
History of blood clotting disorder	46	44
Unsure	12	12
All of these answers	13	13
Headache	2	2
None of these answers	7	7
Age younger than 16	6	6
Other	3	3

Note . Responses were not exclusive. Total number of responses = 139.

Knowledge items were scored and ranged from 0 (low) to 6 (high). More than half of the providers (58%) scored moderate (3-4) on how-to-knowledge items. The mean score was 3.60, $SD = 1.31$. Only 6 providers scored a perfect score of 6 on knowledge items. Table 4 summarizes the providers' how-to-knowledge.

Table 4

How-to-knowledge Score Categories (N = 104)

Level (Points)	<i>n</i>	%
Low (0-2)	19	18
Moderate (3-4)	60	58
High (5-6)	25	24

The items in the practice scale assessed: (a) provider practices in terms of counseling, (b) provider prescribing of emergency contraception in the 12 months preceding the study, (c) provider prescribing of emergency contraception over entire military career, (d) preventative prescribing of emergency contraception, and (e) if the health care provider felt that a woman should be prescribed emergency contraception every time she requests it if she had no other medical problems. Table 5 summarizes responses concerning counseling practices.

Table 5

Response to Survey Question "How Often in the Past 12 Months Have You
Counseled Patients About Emergency Contraception?" (N = 104)

Response	<i>n</i>	%
Not appropriate in my practice	27	26
I do not discuss emergency contraception	27	26
1-2 times	26	25
3-5 times	7	7
6-10 times	7	7
More than 10 times	5	5
I counsel every patient about emergency contraception	1	1

Note . Percentages may total more than 100 due to rounding.

Slightly more than half of participants (52%) reported that they did not counsel patients because it was "not appropriate to their practice" or because they "just do not discuss emergency contraception". Forty-six percent reported counseling women about emergency contraception at least once. Only one (1%) participant reported counseling women of reproductive potential all the time.

It is unknown if a participants' response of "not appropriate in my practice" coincided with the age of their patient population. A provider may feel it is not appropriate in their practice but may be in contact with women of reproductive potential who are at risk for an unintended pregnancy. As one provider reported, "I refer to obstetrics/gynecology for

this" (emergency contraception). Providers may not be counseling because they lack expertise. In addition, providers may have misinterpreted "counseling" to mean psychological counseling, not educating patients about emergency contraception, and responded to the question incorrectly.

The prescribing practices of participants during the 12 months prior to survey were examined. Table 6 summarizes the responses.

Table 6

Response to Survey Question "How Often in the Past 12 Months Have You Prescribed Emergency Contraception?"(N = 104)

Response	<i>n</i>	%
Never	76	73
1-2 times	13	12
3-5 times	11	11
6-10 times	1	1
More than 10 times	3	3

Approximately three quarters (73%) of participants reported that they never prescribe emergency contraception. Reasons given were lack of patient interest (25%) and moral, ethical, or religious reasons (19%). Some of the other reasons that participants gave were "no clinical indication" (29%), "not in my scope of practice" (20%), and emergency contraception "has not come up" (12%).

Providers were asked if they had prescribed emergency contraception at any time in their military career. More than half (62%) indicated that they had never prescribed emergency contraception. Table 7 summarizes the responses.

Table 7

Response to the Survey Question "How Often During Your Entire Military Career Have You Prescribed Emergency Contraception?" (N = 104)

Response	<i>n</i>	%
Never	64	62
1-2 times	18	17
3-5 times	8	8
6-10 times	6	6
More than 10 times	8	8

Note . Percentages total more than 100 due to rounding.

Preventative prescribing was also addressed. Participants were asked if they ever prescribe emergency contraception "just in case" a woman may need it. A substantial majority (88%) responded that they do not prescribe preventatively.

Participants were asked if they felt a woman should be prescribed emergency contraception every time she requests it if she has no other medical problems. Responses were almost equally divided, 44% said "no" and 45% said "yes" (the remaining 11% said they "didn't know"). Of the 45% that responded "yes", 15 (33%) commented that they would also counsel on a more reliable method of birth control.

Participant practice items were scored using one point for each response that indicated that the practice being assessed was taking place. The maximum cumulative score for practice was 5, which indicated high use of emergency contraception in practice. Scores were divided into low (a score of 0-2) and high (a score of 3-5). Table 8 summarizes practice scores categories.

Table 8

Practice Score Categories (N = 104)

Level (Points)	<i>n</i>	%
Low (0-2)	71	68
High (3-5)	33	32

More than half of the participants (68%) scored low (0-2) on practice items. The mean practice score was 1.65 ($SD = 1.72$). The low practice level indicated that participants had not progressed to the implementation stage of the diffusion of innovations process.

Study Question 2

Study Question 2. Is there a relationship between knowledge and practices of military health care providers regarding emergency contraception?

Two types of knowledge were assessed, awareness-knowledge (having heard of emergency contraception) and how-to-knowledge (knowing how to use emergency contraception). Although all respondents reported that they had heard of emergency contraception (awareness-knowledge), not all respondents knew how to use emergency contraception (how-to-knowledge).

The variables knowledge and practice were examined to determine the relationship between them. Knowledge and practice scores were cross-tabulated by group (low, moderate, high) in a contingency table (see Table 9). A chi-square was calculated and was significant $\chi^2 (2, N = 104) = 28.80, p < .001$.

Table 9

Cross-tabulation of Knowledge and Practice Score Groups.

Practice Group	Knowledge Group		
	Low (<i>n</i> = 19)	Moderate (<i>n</i> = 60)	High (<i>n</i> = 25)
Low	26.8%	63.4%	9.9%
High	-	45.5%	54.5%

A Pearson's product-moment correlation coefficient *r* was used to examine the relationship between participants' knowledge and practices. The Pearson's *r* was .57 (*p* < .01), which indicated a moderate relationship between knowledge and practices. The coefficient of determination *R*² calculated from the Pearson *r* was .32 indicating that 32% of the variability of practice was explained by the variable knowledge. These analyses indicate that knowledge and practice scores were related. The more knowledge a participant had about emergency contraception, the greater the practices regarding emergency contraception.

A comment section at the end of the survey provided respondents with the opportunity to remark on the survey, emergency contraception, or any comments they wanted the

researcher to have. Most respondents' comments reflected their personal feelings regarding emergency contraception. Some participants' responses were supportive of emergency contraception. For example one participant stated, "I am a big advocate of emergency contraception and discuss, recommend, and prescribe as often as possible".

However, there were four responses concerning participants' moral and ethical convictions. One provider commented, "I prescribe emergency contraception only in cases of sexual assault. I do not prescribe because someone forgot". Two additional providers made similar comments.

Several participants ($n = 3$) made comments that emergency contraception as a dedicated product, such as Plan B, was not available on their hospital formulary. Four respondents commented that they were "not up-to-date" on emergency contraception, or that they felt emergency contraception was not known about due to "lack of public knowledge". These comments reflect the many issues surrounding emergency contraception.

Theoretical Framework

The data analysis examined the relationship between survey responses and selected elements of the diffusion of innovations theory. The elements of this model, communication channel and social system, were examined. The variables knowledge and practice were correlated with implementation as suggested by the diffusion of innovations theory.

Communication Channel

Diffusion occurs through communication channels. There are two types of communication channels, mass media and interpersonal. The diffusion of innovations theory states that individuals who learn of an innovation through interpersonal means versus mass media communication channels are more likely to adopt an innovation (Rogers, 1995). This study inquired into the mechanisms of how individuals first learned of emergency contraception and categorized participant responses into each category.

The relationship between how the participant first learned of emergency contraception (the communication channel) and their practice level (low or high) was analyzed using a chi-square. Results were not significant $\chi^2 (1, N = 104) = 0.10, p > .05$.

Social System

Diffusion of an innovation is said to occur within a social system. A social system is defined as "a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal" (Rogers, 1995, p. 23). The social system in this study was the participants' practice area. This study did not permit examination of the relationship between the participants' practice area (social system) in relation to the variables knowledge and practice to determine if participants practicing in the same area had similar knowledge and practices. Data analysis of these variables was not possible due to an insufficient number of participants in each practice area. For example, only three emergency service participants responded.

Summary

Of 435 surveys distributed, 120 were returned yielding a response rate of 27%.

Sixteen surveys were excluded due to incomplete data and not meeting eligibility criteria that left 104 surveys for analysis. The demographic characteristics revealed that most participants were married, physician health care providers between the ages of 26 and 39.

All participants indicated that they had heard of emergency contraception. However, 18% of participants scored low and 58% scored moderate on a scale of knowledge regarding how to use emergency contraception. Only 24% had high scores. The majority of participants (68%) scored low on their use of emergency contraception in practice. A moderate relationship was noted between the variables knowledge and practice ($r = .57, p < .01$).

Select elements of the diffusion of innovations theory were explored. These data could not provide evidence supporting the elements of communication channel and social system. A study with a larger sample or a less diverse group might be more effect in examining this question. Study results indicated that awareness-knowledge was unique from how-to-knowledge. Examination of the variable practice indicated that most participants had not entered the implementation stage in the diffusion process.

CHAPTER V

SUMMARY, CONCLUSIONS, DISCUSSION, AND IMPLICATIONS

Most military health care providers had a rather low level of knowledge about emergency contraception. However, there was a higher level of knowledge related to emergency contraception than was reflected in their practices. This corresponds with data from previous studies of civilian health care providers (Delbanco et al., 1997; KFF, 1997; Sills et al., 2000). The findings from this study have implications for future studies involving emergency contraception in a military health care setting.

Summary

The purpose of this research was to describe the knowledge and practices of military health care providers regarding the use of emergency contraception in a military medical treatment facility. The questions answered by this study were: (a) What are the knowledge and practices of military health care providers regarding emergency contraception?, (b) Is there a relationship between knowledge and practices of military health care providers regarding emergency contraception?

This study used a descriptive cross-sectional research design. A convenience sample of military health care providers from 2 sites was surveyed. A 24-item-researcher developed survey was used for data collection. The variables measured were knowledge

and practice. In addition, survey items measured select elements of the diffusion of innovations theory: (a) awareness-knowledge; (b) how-to-knowledge; (c) implementation; (d) communication channels; and (e) social system.

The participants ($N = 104$) were military health care providers assigned to Keesler Air Force Base, Mississippi and Lackland Air Force Base, Texas. All participants were health care providers (physicians, resident physicians, nurse practitioners or physician assistants) with at least 12 months of active duty military service. Physicians and resident physicians constituted the majority of participants (87%).

All participants reported having heard of emergency contraception. Most participants had a moderate amount of knowledge (58%) concerning how to use emergency contraception. Twenty-four percent of participants scored high (5-6 points) on how-to-knowledge items. Just 2% of participants scored zero on knowledge items. Most participants scored low on practices (68%).

A moderate relationship was noted between knowledge and practices ($r = .57, p = < .001$). However, there was no relationship between awareness-knowledge (having heard of emergency contraception) and how-to-knowledge. Participants reported having awareness-knowledge (100%) but only 24% scored low on how-to-knowledge items.

Conclusions

Knowledge and practices regarding the use of emergency contraception in the military mirrors that found in civilian settings, both demonstrating a low to moderate level of knowledge and low levels of practice (Delbanco et al., 1997; KFF, 1997; Sills et al., 2000). These findings may be changed with an appropriate educational program.

Evidence supporting the effectiveness of an educational program exists. Beckman et al. (2001) demonstrated that an education program about emergency contraception improved health care providers knowledge and increased their prescribing practices. Such a program should be established for military health care providers.

In this study, a moderate relationship between participants' knowledge of how to use emergency contraception and practice was evident ($r = .57, p = < .001$). Although this relationship may not be conclusive, it provides added support for the potential value of an education program.

The variable awareness-knowledge (having heard of emergency contraception) was unique from how-to-knowledge. This corresponds with results found by Langer et al. (1999), which revealed that two-thirds of participants who reported that they had heard of emergency contraception did not really know what emergency contraception was.

Elements selected from the diffusion of innovations theory provided an excellent fit with the variables in this study. The variable knowledge was examined as awareness-knowledge and how-to-knowledge. The variable practice coincided with the implementation stage as defined by the theory. In addition, the elements communication channel and social system were interesting items to examine.

All participants had awareness-knowledge but few had adopted emergency contraception as evidenced by low practice scores. This result coincides with a generalization by diffusion of innovations theory that states that the rate of awareness-knowledge for an innovation is more rapid than its rate of adoption (Rogers, 1995).

The amount of how-to-knowledge a participant had correlated with their practices regarding emergency contraception; participants who scored low to moderate on

knowledge also scored low on practices. This supports a statement by the diffusion of innovations theory that states, "when an adequate level of how-to-knowledge is not obtained prior to the trial and adoption of an innovation, rejection and discontinuance are likely to result" (Rogers, 1995, p. 166).

Limitations

This study was limited by several factors. The return rate of 27% was low. Of the surveys received, necessary exclusions reduced the number of cases to a sample size of 104.

Several factors may have contributed to the low return rate. First, the number of military health care providers actually eligible for survey was difficult to assess. Surveys were sent to providers based on practice area schedules. Participants' time in service was an unknown factor. Many health care providers that were sent surveys may have been ineligible because they were active duty less than 12 months. Surveys may have been sent to providers who did not meet the eligibility criteria.

Second, health care providers may not have been at the survey site due to deployments. Many providers were deployed overseas during the month of data collection in support of *Operation Northern Watch* and a possible war with Iraq. Providers who remained at duty sites may have felt over tasked with additional duties and not responded.

A third factor affecting data collection was time. Data collection took place over just 4 weeks. More time for data collection might have resulted in a greater return of surveys.

This study did not examine the effect of demographic variables on the knowledge and practices of military health care providers. Twenty-seven percent of military health care providers reported that it was not appropriate for their practice to counsel women regarding emergency contraception. It is unknown if the providers' reason was due to caring for an aged population or if the provider felt that emergency contraception was out of their scope of practice due to inexperience.

The study was also limited because the data was obtained by survey. Problems with self-report surveys include subjects' ability to recall information, selective recall, and responding in a way that makes one look complimentary (Norwood, 2000). Participants may have looked up answers to questions or guessed at items while completing the survey. In addition, this was the first time the survey was used. The Cronbach's Alpha calculated for knowledge survey items was .41 and practice was .81. Generally, Chronbach's Alpha coefficients should be at least .70 to be considered reliable (Polit, 1996).

The findings from this study were limited to Air Force military health care providers working at large medical centers. Findings may be different at smaller or remote military facilities where health care providers are expected to be "general" health care providers and have up to date knowledge about a broad range of medical topics. However, since military assignments can change at a moments notice, it might be argued that all military providers should have general medical knowledge and should be knowledgeable about emergency contraception.

Recommendations

Further studies are needed to explore the knowledge and practices of military health care providers in other branches of the military (Army, Navy, Marines), as well. In addition, further studies may need to consider that provider practices in clinics, deployment settings, or remote settings may differ.

Military Readiness Issues

Readiness is “the ability of soldiers to leave their current situations with very short notice for unknown locations, for indefinite periods of time, to perform a multitude of soldiering tasks in often extremely austere and remote environments” (Davis, 1999, p. 9). Pregnancy impedes military women’s readiness. Emergency contraception may improve military women’s readiness by decreasing the rate of unintended pregnancies.

Emergency contraception may decrease the number of abortions by military women and beneficiaries of military health care. Recent data indicates that as many as 51,000 abortions were prevented in 2000 with the use of emergency contraception (Jones et al., 2002). In addition, emergency contraception could be prescribed preventatively before the woman deploys for instances where sexual contact was not anticipated. With women so close to the battlefield and in harms way, the potential exists for women to be sexually assaulted by the enemy. Emergency contraception could be used after such an event.

Future Research

Future research concerning emergency contraception in the military is needed. Research involving an emergency contraception educational program for military health

care providers is necessary. In addition, an assessment of military women and military health care beneficiaries' knowledge regarding emergency contraception would expand previous research on this population (Van Royen et al., 2000).

The moral and ethical dilemmas faced by health care providers in relation to emergency contraception were evident with the comments provided by participants. Research is needed to expand understanding of moral and ethical dilemmas and how they influence provider practices.

The review of literature for this study revealed an additional gap in the literature, the prevalence of abortion among military women and military health care beneficiaries. Knowing the rate of abortion would assist with quantifying the potential benefit of emergency contraception in a military environment.

In summary, the knowledge of military health care providers impacts their practice decisions in so far as patient education and prescribing. Military women and military health care beneficiaries should receive the latest information on reproductive health care issues like emergency contraception.

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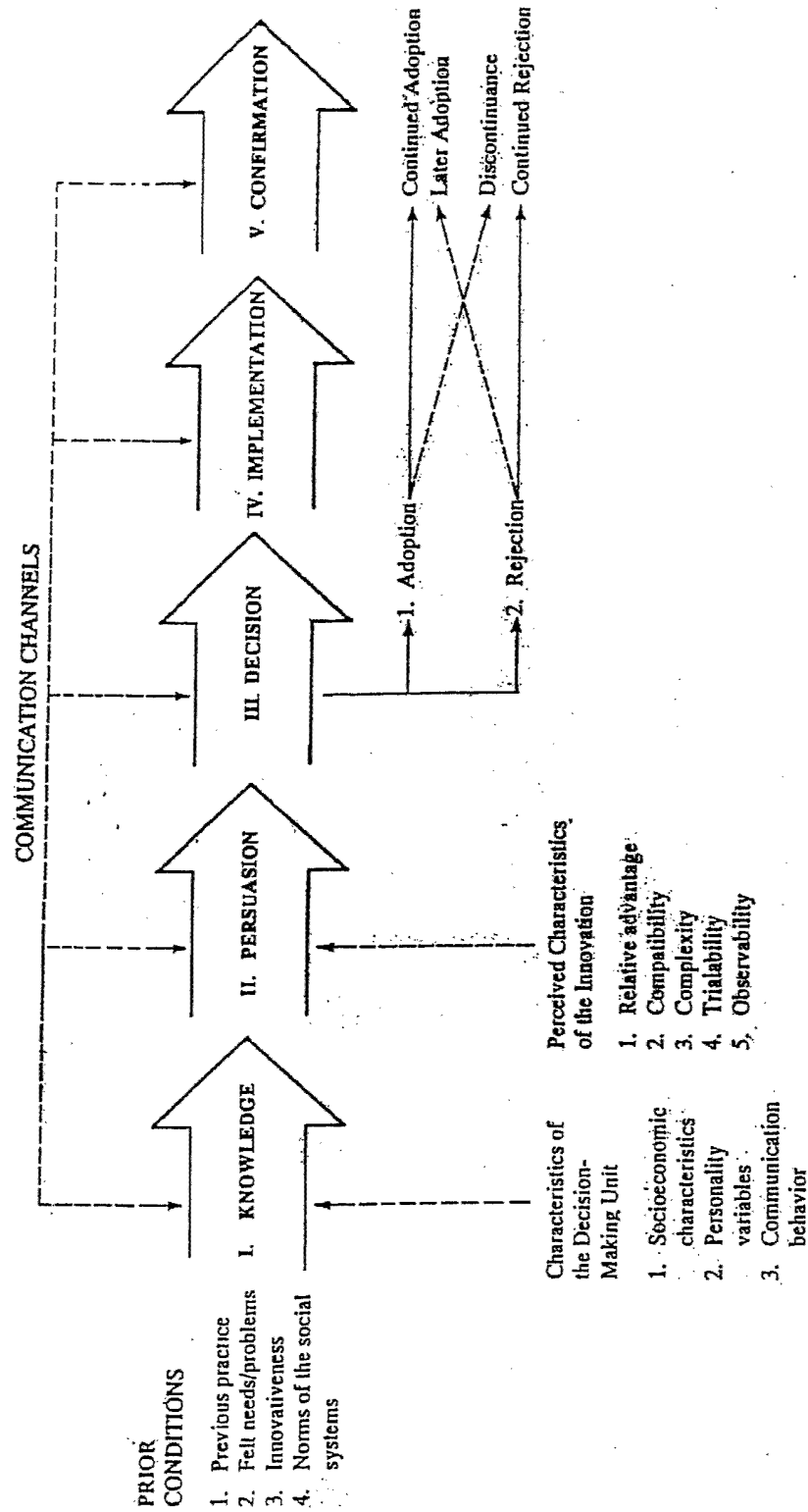
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APPENDICES

Appendix A

A Model of the Stages in the Innovation-Decision Process



Source: Diffusion of Innovations, 4th Edition by Everett M. Rogers (p. 163). Copyright ©1995 by Everett M. Rogers. Copyright © 1962, 1971, 1983 by The Free Press. Reprinted with permission of The Free Press, a Division of Simon & Schuster, Inc.

Appendix B
Emergency Contraception Survey

The purpose of this survey is to assess military health care providers' knowledge and practices regarding emergency contraception. Health care providers from Keesler and Lackland Air Force Bases are participating in this survey. The information is anonymous and completely voluntary. Your participation is greatly appreciated. Please respond by filling in, checking or circling your responses to the best of your ability.

1. Have you ever heard of morning-after pills, also called "Emergency Contraception"?

- ☐ Yes ☐ No (proceed to question 14)

2. How did you first hear about emergency contraception?

- | | | | | |
|---|--|---|--|---|
| <input type="checkbox"/> Initial medical training | <input type="checkbox"/> Student clinical | <input type="checkbox"/> Internship/residency | <input type="checkbox"/> Research report | <input type="checkbox"/> Presentation at a Professional Meeting |
| <input type="checkbox"/> Journal Article | <input type="checkbox"/> A colleague or friend | <input type="checkbox"/> Television or Radio | <input type="checkbox"/> I've never heard of emergency contraception | <input type="checkbox"/> Other _____ |

3. What is the recommended time frame for administering emergency contraception?

- | | | | |
|--|--|---|---|
| <input type="checkbox"/> the morning after unprotected intercourse | <input type="checkbox"/> within 12 hours of unprotected intercourse | <input type="checkbox"/> within 24 hours of unprotected intercourse | <input type="checkbox"/> within 72 hours of unprotected intercourse |
| <input type="checkbox"/> as soon as a urine pregnancy test is positive | <input type="checkbox"/> as soon as a serum pregnancy test is positive | <input type="checkbox"/> other _____ | |

4. What is the method of action of emergency contraception?

- | | | |
|---|---|--|
| <input type="checkbox"/> Prevents Ovulation | <input type="checkbox"/> Induces Abortion | <input type="checkbox"/> Prevents Implantation |
| <input type="checkbox"/> Slows Sperm movement | <input type="checkbox"/> We don't know how it works | <input type="checkbox"/> Not sure |

5. The number one side effect of emergency contraception is (check one box)

- | | | |
|-----------------------------------|--------------------------------------|--|
| <input type="checkbox"/> Bleeding | <input type="checkbox"/> Late menses | <input type="checkbox"/> Breast tenderness |
| <input type="checkbox"/> Nausea | <input type="checkbox"/> Not sure | |

6. What is the efficacy of emergency contraceptive pills in preventing pregnancy among women who have had unprotected intercourse? _____% (write in a number as your estimate)

7. What are the contraindication (s) to giving emergency contraception?

- | | | | |
|--|---|------------------------------------|--------------------------------------|
| <input type="checkbox"/> Age younger than 16 | <input type="checkbox"/> History of blood clotting disorder | <input type="checkbox"/> Pregnancy | <input type="checkbox"/> Headache |
| <input type="checkbox"/> None of these answers | <input type="checkbox"/> All of these answers | <input type="checkbox"/> Unsure | <input type="checkbox"/> Other _____ |

8. Do you believe there is a significant risk of congenital malformation from giving emergency contraception to a pregnant woman?

- ☐ Yes ☐ No ☐ Don't know

9. How often in the past 12 months have you counseled patients about emergency contraception?

- ☐ 1-2 Times ☐ 3-5 Times ☐ 6-10 Times ☐ More than 10 times
☐ I counsel every patient about emergency contraception ☐ I do not discuss emergency contraception ☐ Unsure ☐ Not appropriate in my practice

10. How often in the past 12 months have you prescribed emergency contraception?

- ☐ 1-2 Times ☐ 3-5 Times ☐ 6-10 Times
☐ More than 10 Times ☐ Never; My reason is: ☐ Lack of patient interest in emergency contraception
☐ Moral, Ethical, Religious reasons or
☐ Other (specify) _____

11. How often during your entire military career have you prescribed emergency contraception?

- ☐ 1-2 Times ☐ 3-5 Times ☐ 6-10 Times
☐ More than 10 Times ☐ Never

12. Do you ever prescribe emergency contraception preventatively/"just in case" she may need it?

- ☐ Yes ☐ No
☐ Don't Know

13. Do you feel that a patient should be prescribed EC every time it is requested if she has no other medical problems?

- ☐ Yes ☐ No
☐ Don't Know Comment _____

Questions 14-24 pertain to demographic information.

14. What type of credentialing do you have?

- ☐ Nurse practitioner ☐ Physician ☐ Physician assistant ☐ Resident physician

15. What is your specialty area?

- ☐ Emergency Services ☐ Pediatrics ☐ Family Medicine
☐ OB/GYN ☐ Internal Medicine ☐ Other (specify) _____

16. Where is your practice care area?

- ☐ Emergency Room ☐ Pediatric Clinic ☐ Family Practice Clinic
☐ Internal Medicine Clinic ☐ Women's Health Clinic/Ob/Gyn ☐ Other (specify) _____

17. What age group best describes the female patient's you care for?

- ☐ Under 17 ☐ 17-29 Other _____
☐ 30-49 ☐ 50 and older

18. On average, how many females of reproductive potential do you see in a week? _____
(number)

19. What is your age?

_____ (fill in response)

20. Which of the following best describes your current marital status?

- ☐ Single ☐ Married ☐ Living as a couple (not married) ☐ Widowed
☐ Divorced ☐ Separated ☐ Other (specify) _____

21. What branch of the military are you a member of?

- ☐ Air Force ☐ Army ☐ Navy ☐ Reserves

22. How long have you been in the military?

_____ number of years

23. How frequently do you attend religious services?

- ☐ At least once a week ☐ At least once a month ☐ A few times a year ☐ Never

24. This space is provided for your comments about emergency contraception, this survey, or any comment you would like the researcher to have.

Thank you for your participation.

Captain Beth M. Baykan
Air Force Institute of Technology
University of South Alabama
College of Nursing

Appendix C
Survey Cover Letter

January 20XX

Dear Fellow Health Care Provider,

I am an Air Force Institute of Technology (AFIT) sponsored graduate student conducting thesis research at the University of South Alabama College of Nursing. I wish to survey the practices, knowledge, and preferences of health care providers regarding emergency contraception use in the military over the last 12 months. The information obtained will provide baseline data about emergency contraception in the military and may contribute to future policy.

All active duty health care providers who are in the military, have served on active duty for at least 12 months and are privileged to prescribe oral contraceptive pills at Keesler AFB or Lackland AFB are being asked to participate. You are one of 250 military health care providers to be surveyed.

Participation will involve completing the survey entitled Emergency Contraception: Knowledge and Practices and returning the survey sealed in the enclosed addressed envelope. The survey takes about 10 minutes to complete. Please mail the completed survey via the internal hospital distribution system at your earliest convenience.

Your participation is VOLUNTARY and your answers will be anonymous. No personal identifiers are included on any of the survey materials. No one will know if or how you responded. Data from your facility will be grouped with another data collection site. The site where you complete the survey is anonymous. Survey responses will not affect current position or opportunity for promotion. A summary of aggregate data will be provided to the USAF Office of the Surgeon General.

There will be no consequences to you if you decide not to participate and there is no compensation awarded for participation in the study. I welcome questions and or comments and can be contacted by telephone (228) 435-7408 or by email at baykan98@cableone.net or you may contact my thesis committee chair, Dr. Ross (251) 434-3451. If you have any questions about your rights as a research subject, you may contact Lt. Col. Schaffer at the Clinical Research Lab at Keesler Air Force Base (228) 377-7139. If you would like a copy of the summary of the completed study, please contact me at (228) 435-7408.

Returning the completed survey will constitute your CONSENT TO PARTICIPATE in this study. I value your input and appreciate your participation. Thank you in advance for your assistance in this study.

Very Respectfully,

BETH M. BAYKAN, Capt, USAF, NC

Appendix D
Letter for Survey Approval



**DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND**

December 20XX

MEMORANDUM FOR HQ AFPC/DPSAS
550 C Street West Suite 35
Randolph AFB, TX 78150-4737

FROM: Captain Beth M. Baykan
225 Fechet Drive
Biloxi, MS 39531-6141

SUBJECT: Request for Survey Approval
(ACTION MEMORANDUM)

1. I am an Air Force Institute of Technology (AFIT) sponsored graduate student at the University of South Alabama College of Nursing. I am preparing my thesis research on emergency contraception and am requesting approval for the survey that will be used for data collection.
2. The purpose of this study is to describe the knowledge and practices of military health care providers regarding the use of emergency contraception. Justification for the proposed research lies in the realm of military readiness. Survey results will be reported to the Air Force Surgeon General and submitted for publication in a medical journal.
3. A total of approximately 250 military active duty health care providers from Keesler AFB and Lackland AFB will be surveyed. Physicians, resident physicians, physician assistants and nurse practitioners with at least one year of active duty military service are the population of interest. Convenience sampling will be used and all potential respondents will be given a survey to complete.
4. The pen and paper survey is composed of 24 items and is estimated to take 10 minutes to complete. The survey is anonymous and will provide no specific information about the survey participants. Survey participants will be provided with a cover letter explaining the purpose of the survey and content. Survey completion will constitute participant consent. There are no anticipated risks to completing this survey.

5. Data collection is anticipated to begin in January 2003 and last one month. Surveys will be distributed by internal mail distribution at both hospital sites. An estimated 96 completed surveys are needed to perform data analysis. If the specified number of surveys is not obtained with the first distribution, surveys will be mailed a second time.
6. The thesis proposal and survey have been approved by thesis committee members chaired by Dr. Candice Ross at the University of South Alabama. The Institutional Review Board (IRB) at the university has reviewed and accepted the proposal as an exempt study. The IRB at Keesler and Lackland AFB will review and approve the proposal prior to commencing data collection.
7. For questions regarding this matter, I may be reached by e-mail at baykan98@cableone.net or by telephone at (228) 435-7408. Dr. Ross is also available for questions at (251) 434-3451.
8. Thank you for your prompt attention to this matter.

BETH M. BAYKAN, Capt, USAF, NC
Air Force Institute of Technology
University of South Alabama
Graduate Student

Attachment:

1. Survey with cover letter

----- Original Message -----

From: Hamilton Charles H Civ AFPC/DPSAS

To: 'baykan98'

Cc: Houtz Beverly A Civ AFIT/RPX

Sent: Monday, December 09, 2002 3:01 PM

Subject: RE: Survey Approval

Capt Baykan

Your proposed emergency contraception survey is approved for use with Air Force medical personnel and is assigned a survey control number of USAF SCN 03-005. This control number will expire on 31 Mar 03. We wish you success in your academic pursuits.

Charlie Hamilton

Appendix E

Content Validity

#	Question	Stage in Diffusion of Innovations Theory	Relevance/Source	Knowledge or Practice Subscale
1.	Have you ever heard of morning-after pills, also called "emergency contraception"?	Awareness Knowledge	Rogers (1995) defines awareness knowledge as having "heard of" an innovation. Question adapted from the Sills, Chamerlain, and Teach (2000) survey using a sample of pediatric providers.	Knowledge
2.	How did you first hear about emergency contraception?	Awareness knowledge Communication Channel	Assesses how the individual first learned of emergency contraception. Rogers (1995) states that face-to-face or "near-peer" communication channels decrease uncertainty about an innovation and increase adoption of the innovation. Adapted from the Sills et al., survey. (2000)	Knowledge
3.	What is the recommended time frame for administering emergency contraception?	How-to knowledge	This question will assess the provider's understanding of how to use emergency contraception. Rogers (1995) states that inadequate how-to knowledge will lead to rejection or discontinuance of the innovation.	Knowledge
4.	What is the method of action of emergency contraception?	How-to knowledge	How-to knowledge is knowing how an innovation works (how emergency contraception works) (Rogers, 1995).	Knowledge
5.	The number one side effect of emergency contraception is _____ (check one box).	How-to knowledge	The participants' identification of the side effect will indicate that they know how to counsel a patient on side effects (how-to knowledge).	Knowledge
6.	What is the efficacy of emergency contraceptive pills in preventing pregnancy among women who have had unprotected intercourse? _____% (Write in a number)	How-to knowledge	This question assesses the providers' how-to knowledge with regard to percent efficacy of emergency contraception. This information is necessary how-to knowledge when educating patients. Modified question from the Sills et al. study (2000).	Knowledge

#	Question	Stage in Diffusion of Innovations Theory	Relevance/Source	Knowledge or Practice Subscale
7.	What are the contraindication(s) to giving emergency contraception?	How-to knowledge	This question assesses the provider's understanding of potential candidates for emergency contraception (how-to knowledge). Relevance to how emergency contraception works.	Knowledge
8.	Do you believe there is a significant risk of congenital malformation from giving emergency contraception to a pregnant woman?	How-to knowledge	Question has relevance to the health care providers understanding of how emergency contraception works. Modified question from the Sills et al. study (2000).	Knowledge
9.	How often in the past 12 months have you <u>counseled</u> patients about emergency contraception?	Implementation Stage of Innovation-Decision Process	This question has relevance to the providers' practices regarding patient counseling and education. Counseling regarding emergency contraception is an indication that the participant will consider using it in practice. This question examines the implementation stage of the Diffusion of Innovations Theory.	Practice
10.	How often in the past 12 months have you <u>prescribed</u> emergency contraception?	Implementation Stage of Innovation-Decision Process	Prescriptive practices are a relevant indicator of provider implementation of the innovation; emergency contraception. Modified question from the Sills et al. study (2000).	Practice
11.	How often during your entire <u>military career</u> have you prescribed emergency contraception?	Implementation	Important to know an estimate of the frequency of emergency contraceptive use; an indicator of implementation. Question differs from item 10 because health care providers in the military frequently see a variety of patients.	Practice
12.	Do you ever prescribe emergency contraception preventatively/"just in case" she may need it?	Implementation	Indicates high implementation and "routinization" on the part of the provider (Rogers, 1995). Modified question from the Sills et al. study (2000).	Practice
13.	Do you feel that a patient should be prescribed emergency contraception every time it is requested if she has no other	Implementation	Question has its relevance to the provider's level of implementation. An affirmative response indicates conviction for providing emergency contraception whenever the woman needs it, which is the	Practice

	medical problems?		intended use (Hatcher et al., 1998). A negative response may indicate that the provider is not using emergency contraception in practice or using the product according to personal preference (Rogers, 1995)	
#	Question	Stage in diffusion of innovations theory	Relevance/Source	
14.	What type of credentialing do you have?	Demographic	Important demographic variable for describing the sample.	
15.	What is your <u>specialty</u> area?	Demographic	Relevance to medical training in a specialty. Providers may have specialized training but may not be working in their field of expertise.	
16.	Where is your <u>practice</u> care area?	Demographic	Relevance to types of patients the health care provider is caring for. Relevant to specialty training and practice setting match. Relevant to patients' type that health care provider cares for who may need emergency contraception. Relevance to the number of clientele who may need emergency contraception. Modified question from the Sills et al. study (2000).	
17.	What age group best describes the female patient's you care for?	Demographic		
18.	On average, how many females of reproductive potential do you see in a week?	Demographic		
19.	What is your age?	Demographic		
20.	Which of the following best describes your current marital status?	Demographic	Adopted from Van Royen, Calvin, and Lightner (2000) survey on Emergency Contraception in a military population. Survey result statistically significant for high knowledge of emergency contraception among married individuals. This study hopes to replicate those findings. Air Force Bases frequently have service members from all branches of service. Relevance to homogeneity of the population.	
21.	What branch of the military are you in?	Demographic		
22.	How long have you been in the military?	Demographic	Relevance to eligibility for the study. Also, Rogers (1995) states that problems of implementation are "more serious when the adopter is in an organization" (p. 173). Relevance to replication of findings. Adopted question from Van Royen et al., (2000). Study revealed reports of increased attendance at religious services correlated with high knowledge of emergency contraception.	
23.	How frequently do you attend religious services?	Demographic		
24.	This space is provided for your comments about emergency contraception, this survey, or any comment you would like the researcher to have.		Provides the subject with an opportunity to comment or address something they feel is important but was not covered.	

Appendix F

Expert Rating Tool for Content Validity

Item Number	Rating				Suggestions for Improvement
	1= not relevant	2= unable to assess relevance without item revision or item is in need of revision that would render it irrelevant	3= relevant but needs minor alteration	4= relevant and succinct	
1. Have you ever heard of morning-after pills, also called "Emergency Contraception"?					
2. How did you first hear about emergency contraception?					
3. What is the recommended time frame for administering emergency contraception?					
4. What is the method of action of emergency contraception?					
5. The number one side effect of emergency contraception is					
6. What is the efficacy of Emergency contraceptive pills in preventing pregnancy among women who have had unprotected intercourse? _____ % (write in a number)					
7. What are the contraindication (s) to giving emergency contraception?					
8. Do you believe there is a significant risk of congenital malformation from giving emergency contraception to a pregnant woman?					

Item Number	Rating				Suggestions for Improvement
	1= not relevant	2= unable to assess relevance without item revision or item is in need of revision that would render it irrelevant	3= relevant but needs minor alteration	4= relevant and succinct	
9. How often in the past 12 months have you <u>counseled</u> patients about emergency contraception?					
10. How often in the past 12 months have you <u>prescribed</u> emergency contraception?					
11. How often during your entire <u>military career</u> have you prescribed emergency contraception?					
12. Do you ever prescribe emergency contraception preventatively/"just in case" she may need it?					
13. Do you feel that a patient should be prescribed emergency contraception every time it is requested if she has no other medical problems?					
14. What type of health care provider are you?					
15. What is your <u>specialty</u> area?					
16. Where is your <u>practice</u> care area?					
17. What age group best describes the female patient's you care for?					
18. On average, how many females of reproductive potential do you see in a week? (write in a number)					
19. What is your age?					
20. Which of the following best describes your current marital status?					
21. What branch of the military are you in?					

Item Number	Rating				Suggestions for Improvement
	1= not relevant	2= unable to assess relevance without item revision or item is in need of revision that would render it irrelevant	3= relevant but needs minor alteration	4= relevant and succinct	
22. How long have you been in the military?					
23. How frequently do you attend religious services?					
24. This space is provided for your comments about emergency contraception, this survey, or any comment you would like the researcher to have.					
This Row For Researcher Use Only					
Total scores					

Appendix G

Institutional Review Board Letter of Approval

UNIVERSITY OF SOUTH ALABAMA

COLLEGE OF MEDICINE
INSTITUTIONAL REVIEW BOARD



TELEPHONE: (251) 460-6308
CSAB 138 • MOBILE, ALABAMA 36688-0002
FAX: (251) 461-1595

INSTITUTIONAL REVIEW BOARD
FWA 00001602

REVIEW DATE: December 3, 2002

PROTOCOL NUMBER: 02-210

TITLE OF PROTOCOL: Emergency Contraception: Knowledge and practices of
Military Health Care Providers.

PRINCIPAL INVESTIGATOR: Beth M. Baykan

This panel, operating under the authority of the DHHS Office for Human Research and Protection, assurance number FWA 00001602, has reviewed the following items: 1) protection of the rights and welfare of the human subjects involved; 2) the methods used to secure, and the appropriateness of, informed consent; 3) the risks and potential benefits to the subject. On the basis of this review, we recommend:

<input checked="" type="checkbox"/> Approval			
<input checked="" type="checkbox"/> Initial approval 1 year	<input type="checkbox"/>	Amendment/Revision	<input type="checkbox"/> Pending
<input type="checkbox"/> Renewal (expires)	<input type="checkbox"/>	Deferral	<input type="checkbox"/> Denied
<input type="checkbox"/> See remarks	<input type="checkbox"/>	See attachment	

for this protocol and consent in terms of the University of South Alabama's statement of policy and procedure concerning the use of human subjects in investigation.

The regulations require that the investigator not initiate any changes in the research without prior IRB approval, except where necessary to eliminate immediate hazards to the human subjects, and that all problems involving risks and adverse events be reported to the IRB immediately. Advertisements for recruitment of subjects must receive prior IRB approval. This and subsequent consent forms are approved by the IRB stamp on the last page. You must use copies with the current IRB approval stamp unless written consent has been waived. All subjects must receive a copy of the consent form.

Remarks:

Charles Rich, MD / r/h
Chair, IRB
03 Dec 02
Date

59th Medical Wing (Wilford Hall Medical Center)
Institutional Review Board (IRB)
59th Clinical Research Squadron
Protocol Support/MSRP/(210) 292-7143
Federalwide Assurance #FWA00001750
1265 Wilford Hall Loop, Lackland AFB, TX 78236-5319

FINAL EXEMPT PROTOCOL APPROVAL

27 Dec 02

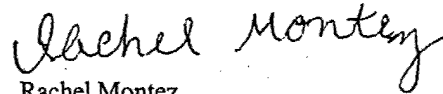
Expedited Approval Date: 27 Dec 02

Principal Investigator: Maj Darlene Foley/MMNO

Protocol Reference Number: FWH20030051E

Protocol Title: "Emergency Contraception: Knowledge and Practices of Military Health Care Providers
University of South Alabama IRB Protocol Number 02-210"

1. Your AFI 40-402 EXEMPT PROPOSAL received expedited review on behalf of the WHMC Institutional Review Board by the Commander, Clinical Research Squadron on 27 Dec 02. Your study was approved as written and may now begin.
2. The Clinical Research Squadron (59 CRES/MSR) Commander must be notified immediately of any additional information, or changes to the protocol. All amendments to the protocol must be reviewed and approved by the MSR Commander prior to their inception.
3. It is the Commander's decision that this study will be terminated as of 26 Dec 03 unless you submit a status report using the template provided on your research disk. Your first status report, which is a request for continuation of the study, will be due to the Protocol Office no later than 1 Nov 03. A status report will be due every 11 months thereafter, in order for the MSR Commander to approve continuance of the study for another year. Upon completion of your study you must submit a final report.



Rachel Montez
Protocol Assistant



DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

19 Dec 02

MEMORANDUM FOR CAPT BETH M. BAYKAN, AFIT GRADUATE STUDENT

FROM: 81 MDSS/SGSFE

SUBJECT: APPROVAL OF EXEMPT PROPOSAL BY EXPEDITED REVIEW

1. On 18 Dec 02 your exempt proposal titled, "**Emergency Contraception: Knowledge and Practices of Military Health Care Providers**", was reviewed and approved by expedited review by Keesler Medical Center Institutional Review Board committee member, Maj Robert H. Doe. Therefore you are now authorized to begin your study. The number assigned to your proposal is **FKE20030006E**. Please use this number as a reference in all correspondence to the Clinical Research Laboratory.
2. Please note that this proposal is now approved for 365 days at which time you are required to submit, in writing, an annual progress report to obtain continuation approval or a final report if the study is complete. If you need to make **any** amendments/revisions/changes to your proposal they must be submitted to the IRB for approval before implementing. As always, you are responsible for complying with all required policies and procedures.
3. If you have any questions please contact me at Comm. (228) 377-2086 or DSN 597-2086. Thank you.

Randi Byrd

RANDI L. BYRD

Protocol Administrator, Clinical Research Laboratory
Keesler AFB MS

cc:
Protocol Folder

BIOGRAPHICAL SKETCH

BIOGRAPHICAL SKETCH

Beth M. Baykan was born in Warwick, Rhode Island, on [REDACTED]. She graduated from Rhode Island College, Providence, Rhode Island, cum laude with a B.S. in nursing in 1994. Beth was commissioned in the United States Air Force in 1994 and selected to pursue a master's degree in nursing in 2001. Beth is married [REDACTED] Turkey.